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HANDLE ATTACHMENT FOR FLASHLIGHT TO FORM BATON

The present application is related to, and claims benefit from, US provisional patent application 60/461408.

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FIELD OF THE INVENTION

The present invention provides a handle, and method for attaching the handle to a flashlight to form a baton, the handle being specially adapted to enable operation of the flashlight after attachment.

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BACKGROUND TO THE INVENTION

Batons and flashlights are widely used by police officers and security guards. Flashlights can be desirably incorporated into batons thereby removing the need for such personnel to carry both a baton and a flashlight. There are many proposals in the prior art directed toward combining flashlights with baton like security sticks.

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US 4,739,990 discloses a self-defence/attack device adapted to contain a flashlight and a side handle projection to hold the device, however, it is not a baton per se owing to its relatively small size. Similarly, the security stick of US 3,737,649 can not be considered a baton due to the absence of a handle. Neither of these devices are compatible for use with existing flashlights.

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Other security sticks provide flashlights as well as additional security features including audible alarms (US 2,908,901), guns (US 2,625,764), and electric shock generators (US 4,486,807). Such devices are specially manufactured and are not compatible for use with existing flashlights.

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US 2,257,227 discloses a baton with a flashlight

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at one end wherein a groove is provided near the handle to operate the flashlight switch. This arrangement is not well adapted for single-hand operation of both the baton and flashlight.

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There is a need for a handle which can be attached to an existing flashlight to form a baton.

SUMMARY OF THE INVENTION

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According to one aspect of the present invention, there is provided a handle for attaching to a flashlight to form a baton, the flashlight being of the type comprising a switch for activating the light of the flashlight, said handle comprising:

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a handle body;

attachment means for attaching said handle body to a flashlight; and

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an actuator fitted to said handle body, wherein when said handle body is attached to said flashlight such that said actuator is positioned in register with said switch, actuation of said actuator will actuate said switch.

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The invention is particularly adapted to actuating switches of the press-button type by said actuator pressing said press-button.

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Preferably, said actuator is contained within said handle body.

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Preferably, said actuator returns to a standby position after said actuator presses said press-button switch.

Even more preferably, said actuator comprises a spring for returning said actuator to said standby

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position.

Preferably, said actuator comprises an actuator rod that can be positioned directly over said press-button switch when said handle body is attached to said flashlight.

Preferably, said attachment means is provided by a clamping collar.

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Even more preferably, said collar has a switch access hole such that a user can access the flashlight press-button switch with a finger when the switch access hole is coincident with the press-button switch.

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In another aspect, there is provided a baton comprising:

a flashlight comprising a switch for activating the flashlight; and

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a detachable handle attached to said flashlight to form a baton, said handle comprising a handle body, attachment means for attaching said handle body to a flashlight and an actuator fitted to said handle body, wherein when said handle body is attached to said

flashlight such that said actuator is positioned in register with said switch, actuation of said actuator will actuate said switch.

In another aspect, there is provided a kit comprising:

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a flashlight comprising a switch for activating the flashlight; and

a handle for attaching to said flashlight to form a baton, said handle comprising a handle body, attachment means for attaching said handle body to a flashlight and an actuator fitted to said handle body, wherein when said handle body is attached to said flashlight such that said

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actuator is positioned in register with said switch, actuation of said actuator will actuate said switch.

According to a further aspect of the present invention, there is provided a method for forming a baton from a flashlight and a handle; the flashlight comprising a switch for activating the flashlight light; said handle comprising a handle body, attachment means for attaching said handle body to a flashlight, and an actuator fitted to said handle body; said method comprising:

attaching said handle body to said flashlight using said attachment means such that said actuator is positioned in register with said switch, wherein actuation of said actuator will actuate said switch.

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According to a further aspect of the present invention, there is provided a handle for attaching to a flashlight to form a baton, the flashlight being of the type comprising a switch for activating the light of the flashlight, said handle comprising:

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a handle body; and

attachment means for attaching said handle body to the flashlight, said attachment means comprising a collar;

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wherein said collar has a switch access hole such that a user can access and actuate the flashlight switch with a finger when the switch access hole is co-incident with the switch.

30 BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the invention will now be described in relation to the accompanying drawings in which:

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FIGURE 1 shows a partially sectioned view of a baton formed by attaching a handle to a conventional security flashlight according to an embodiment of the

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present invention;

FIGURES 2a-2e show single-handed operation of a baton;

FIGURE 3 shows a rear view of a baton handle
5 according to an embodiment of the present invention;

FIGURE 4 shows a sectioned rear view of the baton handle of figure 3;

FIGURE 5 shows a side elevation view of the baton handle of figure 3;

10 FIGURE 6 shows a partially sectioned side elevation view of the baton handle of figure 3; and

FIGURE 7 shows a partially sectioned rear view of the baton handle according to an embodiment of the present invention.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

Batons are t-shaped devices comprising a stick with an orthogonally attached handle. A conventional
20 security flashlight 8, also often referred to as a torch, can be modified by securely attaching a handle 10 in accordance with a preferred embodiment of the present invention to form a baton 6. This general configuration is shown in Figure 1. Security flashlights suitable for this
25 application include those marketed under the name MAG-LITE having a press-button switch 2. (MAG-LITE is a trade mark of Mag Instruments of Ontario, California, USA) Press-button switches are also often referred to as push-button or toggle switches.

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According to one embodiment of the present invention, an actuator having an actuator rod 12a is fitted to a handle body 20a and has an end portion 13a which protrudes from the free end of the handle 10a. When
35 the handle is attached to a flashlight, with the actuator rod 12a in register with the press-button of the flashlight 8, a user 4 can press the end portion 13a of

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the actuator rod with a thumb whilst gripping the handle 10a. Some examples of how the baton 6 may be manipulated by the user 4 during single-handed operation are shown in Figures 2a-e.

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The handle 10a is attached to the flashlight 8 with an attachment means. Attaching the handle 10a such that it coincides with the flashlight's press-button switch 2 gives the overall baton 6 good balance for operational use as shown in Figure 2. The handle 10a and/or attachment means must however be adapted to facilitate operation of the press-button switch 2.

15 An example of a handle 10b in accordance with a preferred embodiment of the present invention is shown in Figures 3-6. Where appropriate, similar numbering is used to show features which are common with the embodiment of Figure 1. The handle has a handle body 20b, an attachment means in the form of a clamping collar 14b for attaching the handle body to the flashlight 8, and an actuator fitted to the interior of the handle body.

The handle body 20b constitutes a generally cylindrical shape, with a hollow central cavity 25b in which the actuator is fitted. The handle body 20b is adapted to fit the hand comfortably by having a curved outer surface 24b. A flanged free end 26b minimises the likelihood of the baton slipping from the user's grasp during operation. The handle body 20b can be made from any suitable material such as a hardened plastic, fibreglass, a moulded alloy or steel.

The clamping collar 14b is firmly attached to the attaching end of the handle body 20b. The effective inner diameter of the collar 28b is adjustable to ensure a firm fit when the handle 10b is attached to the flashlight 8. The collar 14b has two free ends 36 which can be

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temporarily widened by the user 4 so as to permit the flashlight 8 to be placed within the collar 14b and manipulated into the required position before clamping.

5 The collar 14b is integrally formed with the handle body 20b from hardened plastic. A tapered slit 34 extends radially outward from the free ends 36 and inner surface of the collar 14b along the handle 10b, on either side of the actuator rod 12b. Two holes 32 are also
10 provided on opposite sides of the actuator rod 12b for accommodating two bolts. Each bolt is accommodated in a hole and passes through a slit 34. Nuts are tightened on the tail of each bolt when attaching the handle 10b to the flashlight 8. Tightening the two nut and bolt pairs brings
15 the free ends 36 of the collar 14b closer together, narrowing the slit 34 and thereby clamping the flashlight 8 within the collar 14b. A screw and threaded hole combination can be used as an alternative to the nut and bolt arrangement. When the flashlight 8 is clamped within
20 the collar 14b, the handle body 20b protrudes from the flashlight 8 at a right angle and cannot rotate about its longitudinal axis.

 As previously mentioned, the actuator is fitted
25 within a hollow central cavity 25b of the handle body 20b. The actuator includes an actuator rod 12b, compression spring 22b and plunger 38b. The actuator rod 12b runs along the length of the handle body 20b, passing through the hollow central cavity 25b of the handle body 20b,
30 terminating with a plunger 38 at the attaching end of the handle 10b. The plunger 38b is positioned directly over the press-button switch 2 of the flashlight 8 when the handle body 20b is fastened securely to the flashlight 8. The actuator rod 12b passes through the compression spring
35 22b.

The actuator rod 12b is located centrally within

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the hollow central cavity 25b and is laterally supported at either end by abutting the inner wall of the hollow central cavity 25b. The actuator rod 12b can longitudinally slide in or out relative to the handle body 20b as required, with step 40 limiting the extent of inward movement of the actuator rod 12b.

A fixed endstop pin 44 is fitted securely to the handle body 20b and passes through a slotted keyway 16 provided in the actuator rod 12b. This arrangement prevents the rotation of the actuator rod 12b about its longitudinal axis. When the actuator is in its standby position as shown in Fig. 4, an end portion 13b of the actuator rod 12b is flush with the free end of the handle body 20b and a small gap is present between the plunger 38b and the press-button switch 2 of the flashlight 8. The compression spring 22b in the hollow central cavity 25b of the handle body 20b abuts the end portion 13b and step 42b, so as to maintain the actuator's standby position. The press-button switch 2 is not pressed when the actuator is in its standby position.

When force is longitudinally applied toward the flashlight 8 by a user 4 pressing the end portion 13b of the actuator rod 12b, the compression spring 22b further compresses such that the plunger 38b presses down on the flashlight press-button switch 2 directly beneath it. Removing this force will cause the compression spring 22b to expand and the actuator will thus resume its standby position. A section 33 is cut away from the free end of the handle body 20b which causes a part of the end portion 13b to protrude from the handle body 20b, thereby enabling a user 4 to more readily press down on the end portion 13b of the actuator rod 12b. When the actuator is depressed, the actuator rod 12b axially slides in the hollow central cavity 25b and the fixed endstop pin 44 moves relative to the slotted keyway 16. It will be appreciated that the

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slotted keyway 16 assists in laterally constraining the motion of the actuator rod 12b.

Another feature of the preferred embodiment is a switch access hole 50b provided in the collar 14b for enabling the user 4 to access the flashlight press-button switch 2 with a finger. When the handle is attached to the flashlight such that the switch access hole 50b is coincident with the press-button switch 2, the user 4 can directly press the flashlight press-button switch 2 with a finger through the switch access hole 50b. The actuator provided for in the handle 10b is effectively in-operable whilst using this feature.

Further detail of the embodiment of Figure 1 is shown in Figure 7. The actuator rod 12a is located centrally within the hollow central cavity 25a of the handle body 20a. When the actuator is in the standby position, the end portion 13a of the actuator rod 12a slightly protrudes from the free end of the handle body 20a. There is provided a pair of actuator rod locators 41 for centralising the lateral position of the actuator rod 12a within the hollow central cavity 25a. The outer diameter of the actuator rod 12a is smaller than the inner diameter of the actuator rod locators 41 such that the actuator rod 12a can slide axially as required. The actuator rod 12a can also rotate about its longitudinal axis.

The handle body 20a is adapted to fit the hand comfortably by having a curved outer surface 24a. A flanged free end 26a minimises the likelihood of the baton slipping from the user's grasp during operation. A bush 43 is force fitted to the actuator rod 12a. The bush 43 abuts one actuator rod locator 41 when the actuator is held in the standby position by a compression spring 22a, the compression spring 22a thereby abutting an end of the bush

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43 and a step 42a formed by an end of the other actuator rod locator 41. A plunger 38a is connected to an end of the actuator rod 12a.

5 A collar 14a is provided having two free ends 30. Each free end 30 has a raised lip 35. Each lip 35 has two holes 33 situated on opposite sides of the actuator rod 12a for accommodating bolts. Tightening two bolts passing through the lips 35, with nuts, causes the free ends 30 to be
10 drawn together thereby clamping the flashlight 8 within the collar 14a. A switch access hole 50a is also provided in the collar 14a.

It will be appreciated by a person skilled in the
15 art that a number of variations to the foregoing embodiment are permissible that fall within the scope of the present invention. For example, the actuator need not be fitted within the handle body 20 and could alternatively be fitted externally to a solid handle body.

20 Alternative actuators can be substituted for the compression spring actuator detailed in the preferred embodiment for actuating a press-button switch including tension spring and gas chamber equivalents. Alternative
25 actuators can be substituted for actuating other switch types including sliding, lever, tilt or rotary switches.

Some torches have rechargeable batteries with external contacts located in the region of the button. A
30 battery charger for charging the batteries receives the external contacts and charges the battery. In another embodiment, the collar of the handle can be readily modified to incorporate contacts for connecting a battery charger to the external contacts without removing the
35 handle.

These and other modifications will be apparent to

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persons skilled in the art and should be considered as falling within the scope of the invention described herein.